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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/127,676      | 07/31/1998  | IVAN A. BACHELDER    | C98-013             | 1558             |

23459 7590 11/17/2004

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EXAMINER

NGUYEN, PHU K

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2671

DATE MAILED: 11/17/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/127,676

Applicant(s)

BACHELDER ET AL.

Examiner

Phu K. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 & 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over HOOGS et al. (Model-Based Learning of Segmentations).

As per claim 10, Hoogs teaches the claimed "method for refining a geometric description model of an object using an image of that object" the method comprising: "providing an image of the object" (Hoogs, page 495, column 2, lines 31-33, registered image); "providing a rough geometric description model of the object" (Hoogs, page 495, column 2; extract segmentation features). It is noted that Hoogs does not teach "constructing a refined geometric description model". However, it would have been obvious that Hoogs' appearance prediction of the object (Hoogs, page 495, column 1, lines 12-18) is used to "constructing a refined geometric description model" because the knowledge of object's appearance is used to build the object in a refined model, and further simplifies the process of creating the object.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over HOOGS et al. (Model-Based Learning of Segmentations) in view of Bacheder (5,974,169).

As per claim 1, Hoogs teaches the claimed "method for refining a geometric description model of an object using an image of that object" the method comprising: "providing an image of the object" (Hoogs, page 495, column 2, lines 31-33, registered

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image); "providing a rough geometric description model of the object" (Hoogs, page 495, column 2; extract segmentation features). Hoogs does not teach "extracting sub-models from the rough geometric description model". However, Bacheder teaches that "extracting sub-models from the rough geometric description model (Bacheder, column 5, line 20; composite object 92/98); finding poses of the sub-models in the image (Bacheder, column 9, lines 6-33); and using the found sub-models to construct a refined geometric description model" is well known in the art (Bacheder, column 9, lines 44-63). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Bacheder, to configure Hoogs' method as claimed because Hoogs' object model is a combination of the smaller sub-models whose poses are known to the system; and the processes of sub-models simplify the process of a large and complex model.

Claim 4 adds into claim 1 "wherein the model includes a wire frame structure" which Hogs does not teach. However, Bachelder's examples in figures 3-5 teaches that "wire frame structure." It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Bacheder, to configure Hoogs' method as claimed because Hoogs' object model is a combination of the smaller sub-models which are represented as "wire frame structure"; and the processes of sub-models as wire frame structure simplify the process of a large and complex model.

Claim 5 adds into claim 4 "wherein the wire frame structure includes vertices and segments connected thereto" which Hogs does not teach. However, Bachelder's

examples in figures 3-5 teaches that “wire frame structure including vertices and segments.” It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Bacheder, to configure Hoogs’ method as claimed because Hoogs’ object model is a combination of the smaller sub-models which are represented as “wire frame structure including vertices and segments”; and the processes of sub-models as wire frame structure including vertices and segments simplify the process of a large and complex model.

Claim 6 adds into claim 1 “the refined model for the object is required to satisfy certain user-defined geometric constraints” which Hoogs teaches in page 496, column 2, lines 5-30).

Claim 7 adds into claim 6 “wherein the geometric constraints specify that segments must form 90 degree angles at vertices” which is taught in view of Hoogs’ segmentation behavior because such constraints of the segments is just a common case of segmentation behavior.

Claim 8 adds into claim 1 “wherein finding poses of the sub-models in the image includes: validating the poses of the sub-models” which is taught in view of Hoogs’ match metric (page 496, column 2, lines 11-18) because Hoogs’ pose of the large object model can be a combination of smaller sub-model combined to form the large model.

Claim 9 adds into claim 1 “wherein providing a rough model of the object includes also providing a rough model pose” which Hoogs teaches in page 496, col. 2, ls. 11-18.

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Claims 2-3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: In claim 2, and its dependent claim 3, after constructing the refined model, an additional step for using constraints to further refine the refined model; and refitting the further refined model to the found sub-model poses to provide a new pose of the further refined model.

Due to new ground of the rejection, this action has been made NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 - 9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3800.

Phu K. Nguyen  
August 26, 2003

*Phu K. Nguyen*  
[Faint circular stamp]